



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,803	03/19/2004	Peter Jacobus Adrianus Tijm	B2791	8893

7590 11/02/2005  
Drude Faulconer  
1321 Comanche Drive  
Richardson, TX 75080

EXAMINER

PARSA, JAFAR F

ART UNIT	PAPER NUMBER
----------	--------------

1621

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/804,803	<b>Applicant(s)</b> TIJM ET AL.	
	<b>Examiner</b> Jafar Parsa	<b>Art Unit</b> 1621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/19/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

Applicant's election with traverse of Group I, claims 1-9 and 17-20 in the reply filed on 8/11/2005 is acknowledged. The traversal is on the ground(s) that the process of Group I can only be carried out with the system of Group II and method and apparatus, which are basically a mirror of the other, have always been examined in a single application. Applicants' argument is not found persuasive because according to the MPEP 806.05(e)) the inventions are distinct if it can be shown that the process for reforming natural gas to liquid hydrocarbon can be practiced with materially different apparatus. As stated previously the process for converting natural gas to liquid hydrocarbon can be practiced with an apparatus disclosed in US patent 6,130,260. For instance, Applicants' claimed invention utilizes a steam reforming or autothermal reforming for converting natural gas to synthesis gas for preparing liquid hydrocarbons. However, the natural gas can be reformed using only partial oxidation reaction to prepare the synthesis gas, which is suitable for Fischer-Tropsch synthesis reaction. Furthermore, method and apparatus which are basically a mirror of the other can be restricted if it can be shown that the process as claimed can be practiced by another materially different apparatus or by hand.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1621

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benham et al (USPN 5,763,716).

Benham teaches a process for reforming natural gas to oil conversion process using steam reforming or partial oxidation and a Fischer-Tropsch synthesis using a promoted iron-based unsupported catalyst in a slurry reactor (see col, 4, lines 37-42). Benham teaches that In the Fischer-Tropsch synthesis using appropriately designed equipment, the hydrogen to carbon monoxide feed ratio to the Fischer-Tropsch reactor will optimally be in the range of from 0.6 to 2.5 parts of hydrogen for every part of carbon monoxide (see col. 4, lines 24-26).

Benham teaches that carbon dioxide is removed from the resultant hydrogen and carbon monoxide stream before introduction of the gases into the Fischer-Tropsch reactor. The thus removed carbon dioxide can also optionally be added to the starting materials to obtain the desired ratios of hydrogen to carbon monoxide if that addition is desirable or necessary (see col. 6, lines 7-13).

Benham teaches that light hydrocarbon gas stream, after separation from the carbon dioxide, can be recovered for use as a petrochemical feed stock or fuel, or a fuel for the steam reformer, recycled to the inlet gas stream 12 to the Fischer-Tropsch reactor to enable further chain growth of olefins and alcohols. It can even be recycled to the inlet gas stream 6 if desired, as shown by the dotted line 17, to improve overall carbon conversion efficiency and impart an adjustment in the yield of the higher hydrocarbon product stream 21 (see col. 18, lines 51-55). Furthermore, Benham teaches that further object of his process is to convert residual hydrogen and carbon dioxide, which otherwise would be vented or used for fuel, in a second Fischer-Tropsch reactor for conversion into gaseous and liquid hydrocarbon products which can be used directly or selectively recycled as previously described thereby improving the overall carbon conversion efficiency (see col. 5, lines 46-52).

Benham teaches that the hydrocarbon containing gases used must be suitable for Fischer-Tropsch synthesis reaction, and are preferably made to undergo sulfur removal at 2 before being introduced into the steam-reforming reactor 5 (see col. 7, lines 17-21). Benham teaches that the products produced in the synthesis reactor along with the unconverted gases enter a fractionating distillation tower where the products are separated into three fractions: 36.0 barrels of naphtha-comprising molecules having carbon numbers between C.sub.5 and C.sub.10 ;27.7 barrels of diesel--C.sub.11 to C.sub.19 and 17.0 barrels of wax--C.sub.20 + (see col. 22, lines 28-33).

Art Unit: 1621

The difference between Benham and the claimed invention is that Benham produces hydrogen and carbon monoxide wherein the hydrogen to carbon monoxide ratio produced can be used directly in an appropriately designed Fischer-Tropsch synthesis reactor without the further step of removing hydrogen. However, Benham suggests that in order to provide the  $H_{2}/CO$  ratio in the range of optimum ratios described hereinbefore for the catalyst selected, it is necessary and typical that an additional stage of hydrogen removal, by a membrane or the like, is inserted into the product stream between the steam reformer and the Fischer-Tropsch reactor. It would therefore, have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the ratio of hydrogen to carbon monoxide by removing the excess hydrogen, in order to obtain an optimum ratio of hydrogen to carbon monoxide, which is suitable for the Fischer-Tropsch synthesis reaction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jafar Parsa whose telephone number is (571)272-0643. The examiner can normally be reached on 8 a.m.-4:30 p.m. (M-F).

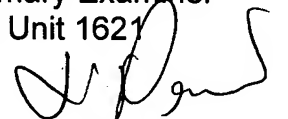
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on (571)272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP  
October 30, 2005

Jafar Parsa  
Primary Examiner  
Art Unit 1621



**J. PARSA**  
**PRIMARY EXAMINER**